

CANCER INCIDENCE AND PREVALENCE

CANCER INCIDENCE BY PRIMARY SITE

This section contains a report on Montana's cancer incidence data for diagnosis year 2002, reported as of October 2003 to the Montana Central Tumor Registry. Mortality data are for the entire calendar year. Incidence reporting for diagnosis year 2002 was approximately 90% completed on this date with 4,052 new cancer diagnoses having been reported for 2002. The expected number of Montana cancer cases for 2002 is 4,550. Estimates of Montana's expected cancer cases are based on the North American Association of Central Cancer Registries (NAACCR) method. The expected incidence rate for Montana was computed from Montana race-sex-site-specific age-adjusted death rates (2000 U.S.) and incidence-to-mortality (I/M) rate ratios computed from SEER race-sex-site-specific age-adjusted (2000 U.S.) incidence rates and U.S. race-sex-site-specific age-adjusted death rates (2000 U.S.).

Table C-1 shows reported incidence of cancer for Montana residents diagnosed in 2002. The table shows cancer incidence by sex and by primary site--the original bodily location or organ system of the cancer. The most frequently diagnosed cancers were of the prostate (19.5% of all cancer diagnoses), female breast (15.0%), the lung and bronchus (11.9%), the colon (7.0%), melanoma (4.6%), the urinary bladder (4.5%), Hodgkin's and Non-Hodgkin's Lymphoma (4.0%), and the rectum and rectosigmoid (2.8%). Invasive cervical cancer accounted for less than 1% of cancer diagnoses (4.8% for both in-situ and malignant) for Montanans for 2002. However, 166 of the 195 cervical cancers were in-situ--that is, non-invasive. Testicular cancer also accounted for less than 1% of cancer diagnoses—only 26 cases were reported in 2002.

Table C-2 shows the incidence of cancer for the ten most frequently diagnosed primary sites and by the sex and age of the patient at diagnosis. Men diagnosed with prostate cancer tended to be 50 or older. Diagnoses of breast cancer in women generally began in their late thirties and the age distribution was not as concentrated on a central age category as was that of prostate cancer for men. In 2002, Montanans diagnosed with cancer of the lung and bronchus or the urinary bladder were most likely to be men aged 50 or older. Those diagnosed with cancer of the colon were about equally likely to be male or female and usually 50 years of age or older. The distribution of 2002 cancer diagnoses by site, sex, and county of residence is shown in **Table C-3** for the 10 most frequently diagnosed primary sites.

Figures 54, 56, 58, and 60 show the number of cancer diagnoses by year, sex of the patient, and stage of disease at diagnosis for prostate, breast, lung, and colorectal cancer, respectively. The stage of disease is recorded at the time of diagnosis and is not updated as the cancer progresses. Diagnosis at a localized stage means that the cancer has not spread beyond the organ or site of origin. Diagnosis at a regional stage means the cancer has spread to adjacent organs or regional lymph nodes. Diagnosis at a distant stage means the cancer has spread past adjacent organs or tissues to lymph nodes or organs elsewhere in the body.

Figures 55, 57, 59, and 61 show the five-year relative survival rates for these same cancers, comparing Montana and the United States. The five-year survival rate is the percent of all patients who are living five years after diagnosis, whether the patient is in remission, disease-free, or under treatment. These rates have been adjusted to account for patients dying from causes other than cancer.

PROSTATE CANCER

Prostate cancer was the most common cancer diagnosed in men in Montana and the United States, with 790 cases reported for 2002 in Montana. This incidence rate usually exceeds that of lung cancer. Nationally, it is primarily a disease of the elderly, as the median age at diagnosis is 70. In 2002, 110 Montana residents died of prostate cancer (**Tables D-1, D-2, D-5, and D-6**), making it the fourth leading cause of cancer deaths.

Figure 54 shows the number of prostate cancer diagnoses reported by year and the stage at diagnosis for the years 1993 through 2002. The patient diagnosed with prostate cancer at early stages may be asymptomatic or just have symptoms of lower urinary tract obstruction. In 2002, 63% of prostate cancers were diagnosed at a local stage. Bone pain is the most frequent complaint from patients diagnosed with advanced disease. In Montana, the percentage of prostate cancers diagnosed at a distant stage decreased from 7% in 1993 to 2% in 2002. Cases reported as in-situ stage increased in 2002 to 7% because Prostatic Intraepithelial Neoplasia (PIN) became categorized as an in-situ cancer and was reportable. The Prostate-Specific Antigen (PSA) test has been useful in detecting prostate cancer at earlier stages. About 90% of cancers of the prostate are characterized as adenocarcinomas.

Figure 54

DIAGNOSIS OF PROSTATE CANCER MONTANA RESIDENTS, 1993-2002

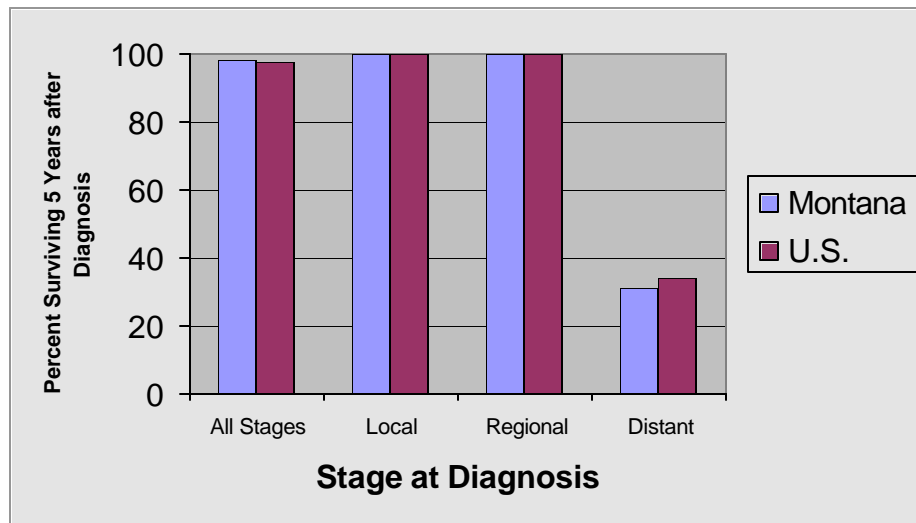
Year of Diagnosis	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Number of Cases Diagnosed	804	645	737	683	667	722	754	783	837	790
Percent Stage at Diagnosis*										
In-Situ	0%	0%	0%	0%	1%	0%	0%	0%	5%	7%
Local	59%	64%	60%	57%	59%	65%	63%	67%	66%	63%
Regional	19%	15%	13%	16%	13%	14%	15%	12%	10%	10%
Distant	7%	6%	5%	5%	6%	5%	3%	4%	4%	2%
Unknown	15%	14%	22%	21%	22%	17%	18%	16%	16%	17%

* Percents may not add to 100% because of rounding.

Figure 55 shows five-year survival rates for prostate cancer, comparing Montana's to the United States' rate. One hundred percent of Montanans diagnosed at a localized or regional stage were alive five years after diagnosis; however, only about 31% of those diagnosed at a distant stage were alive five years after diagnosis. Although survival rates are high for early diagnosis, it should be re-emphasized that prostate cancer was the third leading cause of cancer deaths among Montanans in 2002.

Figure 55

**FIVE-YEAR RELATIVE SURVIVAL BY STAGE AT DIAGNOSIS FOR PROSTATE CANCER
MONTANA AND THE UNITED STATES, 1993-2002**



Prostate cancer is generally treated with surgery or radiation. About 50% of patient's diagnosed with prostate cancer have surgery (prostatectomy) within four months after diagnosis. Patients with early stage prostate cancer often opt for no treatment, but their physicians must watch these patients closely. About 35% of prostate cancer patients are treated with radiation. About 25% are treated with hormonal therapy shortly after diagnosis, but this course of treatment is usually reserved for patients with advanced disease.

BREAST CANCER

Breast cancer was the most frequently reported malignancy among Montana women for 2003, with 609 cases reported as diagnosed. It was the underlying cause of death for 150 female Montanans and two males, making breast cancer the third leading cause of cancer deaths in 2002 (**Tables D-1, D-2, D-5, and D-6**). Breast cancer incidence increases dramatically with age, and the majority of cases occur after age 50. In Montana in 2002, 20% were diagnosed at an in-situ stage, 52% of breast cancers at a local stage, 21% at a regional stage, and 2% at a distant stage.

The distribution of stage at diagnosis is shown in **Figure 56**. The proportion of patients diagnosed at an in-situ stage has increased slightly over the past decade, while the proportion diagnosed at a local and regional stages has decreased. Patients are being diagnosed at earlier stages and are detecting cancers earlier. Breast self-examination (BSE) may detect about 60% of breast cancers. Patients who perform routine BSE find smaller lesions and it is well established that women with early-stage breast cancer have better chances of survival. Screening mammography can detect a breast cancer in an earlier stage, which may account for an increase in the diagnosis of breast cancer nationally over the last decade.

Figure 56

**DIAGNOSIS OF BREAST CANCER
MONTANA RESIDENTS, 1993-2002**

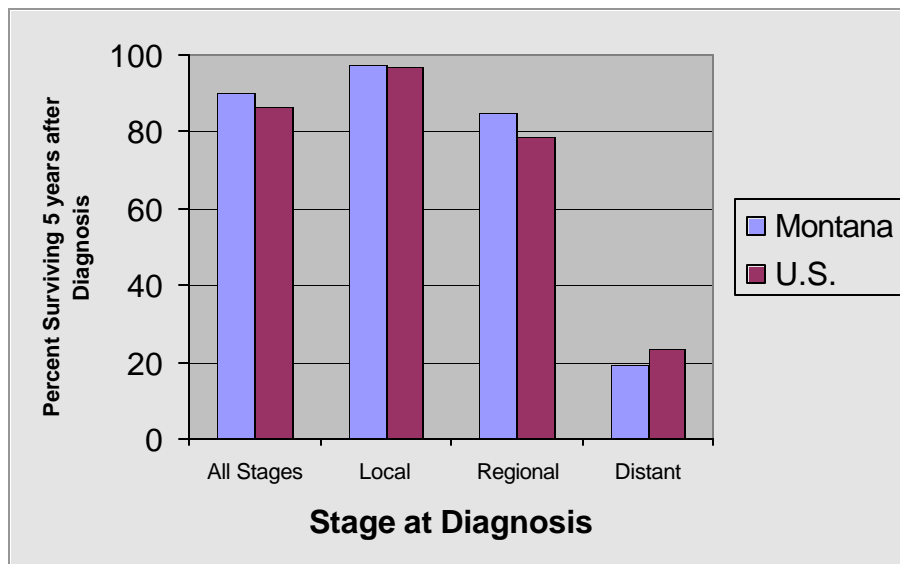
Year of Diagnosis		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Number of Cases Diagnosed	Males	5	4	1	1	6	5	5	2	8	0
	Females	670	633	692	759	736	773	824	807	813	609
Percent Stage at Diagnosis*											
In-Situ		7%	10%	12%	11%	13%	14%	17%	18%	19%	20%
Local		59%	56%	55%	54%	50%	53%	52%	54%	49%	52%
Regional		25%	24%	21%	24%	28%	26%	22%	22%	24%	21%
Distant		3%	6%	4%	4%	3%	2%	3%	2%	3%	2%
Unknown		5%	5%	7%	7%	5%	4%	6%	4%	5%	5%

* Percents may not add to 100% because of rounding

Figure 57 shows the five-year relative survival rate for women diagnosed with breast cancer, comparing Montana with the United States. For Montana women, 97.4% of women survived 5 years if diagnosed at a local stage and about 85% if diagnosed at a regional stage. If the cancer was diagnosed at a distant stage, the rate of survival was 19%. Breast cancer is treated in a variety of ways. Almost 95% of breast cancer patients are treated with surgery (lumpectomy or mastectomy) and about 40% are treated with radiation. About 40% are treated with both surgery and radiation. About 35% of patients are treated with chemotherapy, hormonal therapy or both. Almost 75% of breast cancers are duct cell carcinomas and over 10% are lobular carcinomas, which are a form of adenocarcinoma of the mammary gland.

Figure 57

**FIVE-YEAR RELATIVE SURVIVAL BY STAGE AT DIAGNOSIS FOR BREAST CANCER
MONTANA AND THE UNITED STATES, 1993-2002**



LUNG CANCER

In Montana, lung cancer was the second most common cancer diagnosis among men (after prostate cancer) and women (after breast cancer) for 2002; 484 new cases have been reported for 2002. It was the underlying cause of death for 527 Montanans (**Tables D-1, D-2, D-5, and D-6**), making it the leading cause of cancer deaths. The incidence of lung cancer increased in males by about 10% from 1993 to 2002; the percentage increase in women was more than twice as large (30%).

The number of cases diagnosed and the stage at diagnosis for lung cancer diagnoses of Montanans are shown in **Figure 58**. In 2002, 47% of lung cancers were diagnosed at a distant stage and only 15% at a local stage. The stage was unknown or unstageable for about 6% of lung cases in 2002. Certain types of lung cancer spread very early and quickly, which causes the patient to be diagnosed at a regional or distant stage.

Figure 58

DIAGNOSIS OF LUNG CANCER MONTANA RESIDENTS, 1993-2002

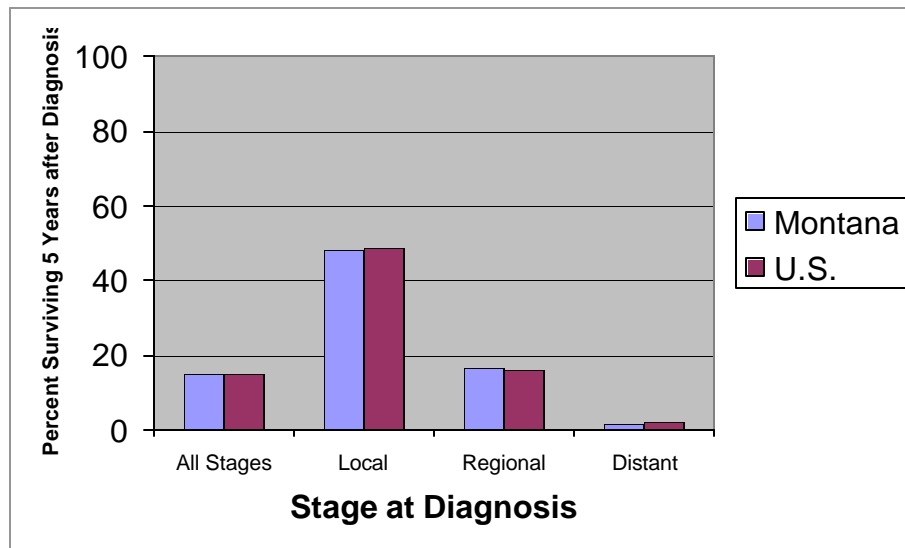
Year of Diagnosis		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Number of Cases Diagnosed	Males	307	318	365	378	338	410	338	378	353	270
	Females	212	227	257	255	279	318	261	304	322	214
Percent Stage at Diagnosis*											
In-Situ		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Local		22%	22%	17%	19%	17%	17%	16%	22%	15%	15%
Regional		25%	24%	21%	21%	25%	27%	27%	26%	28%	32%
Distant		42%	37%	36%	38%	39%	39%	39%	37%	37%	47%
Unknown		11%	16%	25%	22%	19%	17%	17%	16%	20%	6%

* Percents may not add to 100% because of rounding.

Lung cancer has a much poorer prognosis than other cancers, partly because relatively few cases are diagnosed at an early stage. **Figure 59** shows the five-year relative survival rate for lung cancer, comparing Montana and the United States rates. Forty-eight percent of patients diagnosed at a localized stage survive five years; however, only 17% survive five years if diagnosed at a regional stage and less than 2% if diagnosed at a distant stage. Treatment methods for lung cancer are determined by the type of cancer and the stage at diagnosis. Most lung cancers are treated with surgery, radiation, or chemotherapy. About 23% of patients with lung cancer are treated with surgery and about 41% are treated with radiation. Chemotherapy is given to about 38% of patients. A cough is the most common symptom of a lung cancer, but since coughing is a common symptom of many acute and chronic conditions, the diagnosis of lung cancer may be delayed. Twenty-four percent of lung cancers are squamous cell carcinomas, derived from stratified squamous epithelium. About 25% are adenocarcinomas and 20% are carcinoma, NOS.

Figure 59

**FIVE-YEAR RELATIVE SURVIVAL BY STAGE AT DIAGNOSIS FOR LUNG CANCER
MONTANA AND THE UNITED STATES, 1993-2002**



COLORECTAL CANCER

Colorectal cancer was the fourth most common malignancy in Montanans for 2002; there were 398 cases diagnosed and 184 deaths caused by colorectal cancer in 2002 (Tables D-1, D-2, D-5, and D-6) making it the second leading cause of cancer deaths. Because of the anatomic proximity and physiologic similarity of the colon and rectum, these two segments are often reported together as "colorectal" cancer. The incidence of colorectal cancer is extremely low in childhood and increases with age. Figure 60 shows the frequency and stage at diagnosis for cancers of the colon and rectum. In 2002, 38% were diagnosed at a local stage, 37% at a regional stage, and 15% at a distant stage.

Figure 60

**DIAGNOSIS OF COLORECTAL CANCER
MONTANA RESIDENTS, 1993-2002**

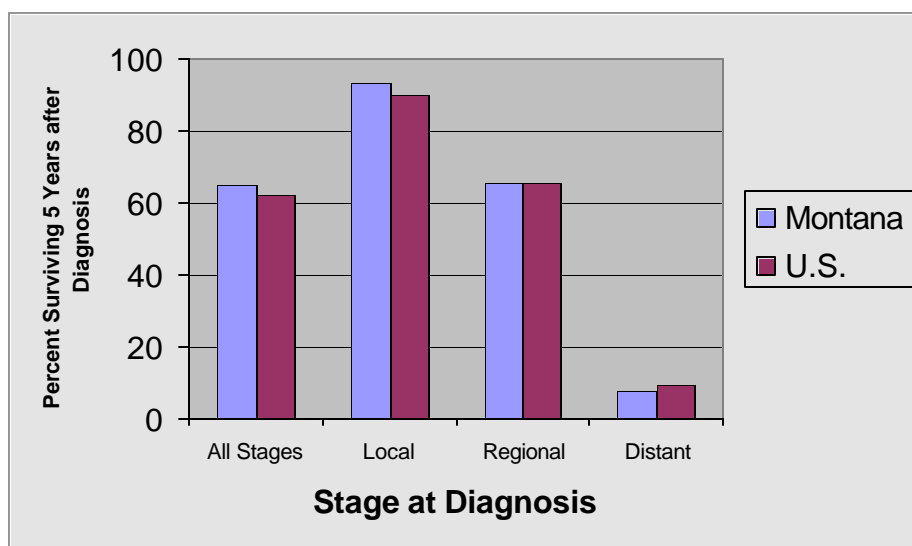
Year of Diagnosis		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Number of Cases Diagnosed	Males	225	223	234	259	270	296	291	253	286	215
	Females	202	223	229	233	236	245	237	235	240	183
Percent Stage at Diagnosis*											
In-Situ		2%	2%	2%	3%	4%	4%	2%	3%	5%	3%
Local		34%	39%	32%	34%	36%	34%	33%	34%	34%	38%
Regional		40%	35%	39%	38%	37%	39%	42%	42%	42%	37%
Distant		16%	15%	14%	13%	16%	16%	14%	14%	11%	15%
Unknown		8%	9%	12%	12%	8%	8%	9%	7%	8%	6%

* Percents may not add to 100% because of rounding.

Figure 61 shows the five-year relative survival of patients diagnosed with colorectal cancer, comparing Montana and the United States. When colorectal cancer is detected at an early, or localized, stage the five-year relative survival is over 93%. After the cancer has spread to a regional organ or lymph node, the survival rate drops to about 66%. Colorectal cancer is mostly treated with surgery or chemotherapy or both. Almost 90% of patients with colorectal cancer are treated with surgery and about 33% are treated with chemotherapy. About 11% are treated with radiation. About 70% of colorectal carcinomas are adenocarcinoma and 11% are mucinous adenocarcinoma (an adenocarcinoma which secretes mucin).

Figure 61

**FIVE-YEAR RELATIVE SURVIVAL BY STAGE AT DIAGNOSIS FOR COLORECTAL CANCER
MONTANA AND THE UNITED STATES, 1993-2002**



References:

Ries LAG, Eisner MP, Kosary CL, Hankey BF, Miller BA, Clegg L, Edwards BK (eds). SEER Cancer Statistics Review, 1975-2000, National Cancer Institute, Bethesda, MD, 2003.
http://seer.cancer.gov/csr/1975_2000/sections.html
 North American Association of Central Cancer Registries, Cancer in North America: 1996-2000, Volume One: Incidence, 2003.
 Robert B. Cameron, MD, Practical Oncology a Lange Clinical Manual, 1994.
Clinical Oncology, Second Edition, American Cancer Society, 1995.